VEHICLE INSPECTION (CAPI)

United States Department of Transportation
National Highway Traffic Safety
Administration

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Tire Pressure Monitoring System –
Outage Rates and Repair Costs

Paperwork Reduction Act Burden Statement

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Formatting conventions:

Questionnaire item
///PROGRAMMING LOGIC///
Explanatory notes

Programmer Notes:

- *All variables are assumed to be numeric*
- *For SELECT ALL THAT APPLY items, create a series of variables with _1, _2, etc. appended to original variable name to indicate selection status of each response option*
- *For OTHER: SPECIFY items, create a new variable (length $ 256) with _OTHER appended to original variable name to hold open-end text*

Disposition Definitions:

- *61 = Completed inspection*
- *Create GPS variable to tag location of interview*

NHTSA Form 1273

///PROGRAMMER: generate QR CODE containing MASTERID
INSPECTOR: GET INTERVIEWER TO SCAN QR CODE for ID syncing///

MODULE 1 : ALL VEHICLES APPROACHED

///Set MASTERID to contain crew ID and timestamp to enable linking with Driver Interview///

DATE	**[INTERNAL]**
TIME	**[INTERNAL]**
PSUID	**[1-24]**
CREWID	**[1-4]**

BODY_OBS **Body type of vehicle**
1. AUTO (INCLUDES SEDAN/WAGON/HATCHBACK)
2. SPORT UTILITY VEHICLE (SUV)
3. VAN (INCLUDES TRADITIONAL AND MINIVANS)
4. LIGHT TRUCK

MAKE_OBS **Make of vehicle**
1. AUDI
2. BMW
3. BUICK
4. CADILLAC
5. CHEVROLET
6. CHRYSLER
7. DODGE
8. FORD
9. GMC
10. HONDA
11. HYUNDAI
12. JEEP
13. KIA
14. LEXUS
15. MAZDA
16. MERCEDES
17. NISSAN
18. RAM
19. SUBARU
20. TOYOTA
21. VOLKSWAGEN
22. VOLVO
23. OTHER: SPECIFY
98. DON'T KNOW

LANG_OBS **Language spoken**
1. ENGLISH

2. SPANISH
3. OTHER
98. DON'T KNOW

AGE_OBS   **Age of driver**
1. YOUNG ADULT (Up to 25)
2. ADULT (25-69)
3. SENIOR (70 and over)
98. DON'T KNOW

SEX_OBS   **Sex of driver**
1. MALE
2. FEMALE
98. DON'T KNOW

OCCUPAD   **Number of ADULT occupants (if ages are unclear, count all as adult)**
/RANGE 1-10/
98. DON'T KNOW

OCCUPCH   **Number of CHILD occupants (if ages are unclear, count all as adult)**
/RANGE 1-10/
98. DON'T KNOW

DAMG_OBS   **Is there damage to the vehicle?**
1. NONE VISIBLE (ALLOWING FOR PAINT SCRAPES, WINDOW ISSUES, WIPER ISSUES)
2. MINOR (E.G., DENTED FENDERS/BODY PANELS)
3. MAJOR (E.G., MAJOR DAMAGE TO HOOD, FRONT END, REAR END, DOORS THAT WOULD MAKE PARTS OF VEHICLE UNUSABLE)
98. DON'T KNOW

HITCH   **Is the vehicle equipped with a rear hitch?**
1. YES
2. NO
98. DON'T KNOW

ELEC_OBS   **Is the car a hybrid or electric?**
1. YES
2. NO
98. DON'T KNOW

FUEL_OBS   **Fuel type purchased**
1. DIESEL
2. REGULAR (GENERALLY 87 OCTANE)
3. MID-GRADE (GENERALLY 89 OCTANE)
4. PREMIUM (GENERALLY 91 OCTANE)
5. OTHER
6. NONE
98. DON'T KNOW

PAY   **Where was payment for fuel made?**

1. AT PUMP
2. IN STORE
3. NOT APPLICABLE [ONLY ENABLED IF FUEL_OBS=06]
98. DON'T KNOW

END MODULE 1

SET DISPOSITION 61= "COMPLETE" IF MAKE_OBS – BODY_OBS IS ANSWERED IN MODULE 1 AND TPMSTAPE - EMAG IS ANSWERED IN MODULE 2

MODULE 2: IF DRIVER IS PARTICIPATING AND 2006<=MODELYEAR<=2016

///ASK ALL///
VINSCAN   INSPECTOR: SCAN VIN

PROGRAMMER: SET VINSCANSTAT=1 IF SUCCESSFUL SCAN, ELSE SET VINSCANSTAT=2

///IF VINSCANSTAT=1 THEN SET MODELYEAR = MODELYEAR EXTRACTED FROM VIN SCAN AND VPIC ///

///ASK IF VINSCANSTAT=2, Failed to obtain successful VIN scan ///
MY_BPILLAR1   INSPECTOR: MANUALLY ENTER VIN
              PROGRAMMER: ALLOW 17 alpha/numeric character

              999999999999 NOT ENTERED

///IF MODELYEAR NOT SET YET AND MY_BPILLAR1 <> MISSING OR <> 999999999999, SET MODELYEAR = MY_BPILLAR1///

///PROGRAMMER: USE VIN TO CONNECT TO SAFERCARS.GOV TO ACCESS RECALL STATUS; SET RECALL=0 IF NO OPEN RECALLS, ELSE SET RECALL=1 IF 1+ OPEN RECALLS///

IND_TPMS   PROGRAMMER: SET IND_TPMS=01 (INDIRECT TPMS VEHICLE) IF VPIC MATCHES NHTSA Table 3/Table 4, ELSE SET IND_TPMS=02

//IF MODELYEAR < 2006 OR MODELYEAR > 2016//
INELIG   INSPECTOR INFORM DRIVER: Your vehicle is not eligible for our survey.
              01   CONTINUE

//IF 2006<=MODELYEAR<=2016 AND FMVSS 138 COMPLIANT//
ELIG   INSPECTOR INFORM DRIVER: Your vehicle is eligible for our survey.
              01   CONTINUE

//ASK IF ELIG=01//
TPMSTAPE   Has an attempt been made to cover up any indicator lights on the dash (e.g., with tape)?
              1.   YES
              2.   NO

///IF ELIG=01, TURN IGNITION FROM LOCK (0) TO ON (II) POSITION AND PAUSE 5 SECONDS///
TPMSON   Select all TPMS-related indicator lights or readouts visibly illuminated on the dash (allowing for minor stylistic variations or differences in wording):
              [SELECT ALL THAT APPLY FROM GRAPHICAL GRID]
          ///VALIDATE: SELECTION OF "NONE VISIBLE" MEANS NO OTHER OPTIONS ARE SELECTED///

1.	2.
3.	4.
5. WORDS ON DIGITAL READOUT: "CHECK {LEFT FRONT} TIRE PRESSURE"	6. WORDS ON DIGITAL READOUT: "TIRE PRESSURE TOO LOW"
7. WORDS ON DIGITAL READOUT: "TPMS SYSTEM MALFUNCTION"	
8. DASH OBSTRUCTED (e.g., tape, paper)	9. CLEAR VIEW OF DASH, NO TPMS LIGHTS VISIBLE

//ASK ALL IF ELIG=01//

WARN1   **Are ANY indicator lights (other than TPMS indicators) illuminated in ON (II) position?**
1. YES
2. NO
98. DON'T KNOW

///ASK ALL IF ELIG=01///

TPMSSTART   **TURN IGNITION FROM ON (II) TO START (III) POSITION AND PAUSE 5 SECONDS**
Select all TPMS-related indicator lights or readouts visibly illuminated on the dash (allowing for minor stylistic variations or differences in wording):
[SELECT ALL THAT APPLY FROM GRAPHICAL GRID]
///VALIDATE: SELECTION OF "NONE VISIBLE" MEANS NO OTHER OPTIONS ARE SELECTED; SELECTION OF 01, 03, 05, 06, 07, 08 MEANS 02, 04, 09 CANNOT BE SELECTED AND VICE VERSA///

1. SOLID	2. FLASHING
3. SOLID	4. FLASHING
5.	6.

7. WORDS ON DIGITAL READOUT: "CHECK {LEFT FRONT} TIRE PRESSURE"	8. WORDS ON DIGITAL READOUT: "TIRE PRESSURE TOO LOW"
9. WORDS ON DIGITAL READOUT: "TPMS SYSTEM MALFUNCTION"	
10. DASH OBSTRUCTED (e.g., tape, paper)	11. CLEAR VIEW OF DASH, NO TPMS LIGHTS VISIBLE

//ASK ALL IF ELIG=01//

WARN2 **Are any other indicator lights (other than TPMS indicators) illuminated in START (III) position?**
1. YES
2. NO
98. DON'T KNOW

- **IF TPMSON NE 9 AND TPMSSTART IN 2,4,9 THEN TPMSMALF=1; indicator(s) working @ ON, system malfunction @ START**
- **ELSE IF TPMSON NE 9 AND TPMSSTART IN 1,3,5,6,7,8 THEN TPMSMALF=2; indicator(s) working @ ON, low pressure only @ START**
- **ELSE IF TPMSON=9 AND TPMSSTART=11 THEN TPMSMALF=3; no TPMS indicator(s) @ ON, no TPMS indicator(s) @ START**
- **ELSE IF TPMSON NE 9 AND TPMSSTART=11 THEN TPMSMALF=4; indicator(s) @ ON, no indicator(s) @ START**
- **ELSE TPMSMALF=5; status unclear**

PROGRAMMER: TRANSFER DATA TO INTERVIEWER TABLET ALONG WITH MODELYEAR AND IND_TPMS

INSPECTOR: If transfer does not work then communicate result to interviewer verbally or via predetermined hand signal. DISPLAY DASH INSPECTION RESULT.

//ASK ALL IF ELIG=01//

ODOMETER **Odometer reading**
/RANGE 1-1,000,000/

//ASK ALL IF ELIG=01//

EMAG **Does the vehicle contain visible equipment that could cause electromagnetic interference (e.g., radar detector)? [Toll collection tags do NOT count as electromagnetic interference equipment]**
1. YES
2. NO

///IF IND_TPMS=01 AND MALFCODE=02,04///

MANU_TSPR   VEHICLE INSPECTOR: ENTER TIRE SIZE AND PRESSURE RECOMMENDED BY MANUFACTURER; SEE DRIVER-SIDE DOOR JAMB/DRIVER-SIDE DOOR POST. IF ONLY ONE SIZE IS LISTED ON THE PLACARD, THEN ENTER THAT SIZE AND PRESSURE; IF MORE THAN ONE TIRE SIZE IS LISTED ON THE PLACARD, THEN ENTER ALL LISTED TIRE SIZES AND PRESSURES ON THE PLACARD.

PROGRAMMER: ALLOW 2 NUMERIC CHARACTERS AND UP TO 3 TIRE SIZE AND PRESSURE ENTRIES

TSR_X
TPR_X

///IF IND_TPMS=01 AND MALFCODE=02,04///

ACT_TS_X   VEHICLE INSPECTOR: ENTER ACTUAL TIRE SIZE THAT MOST CLOSELY MATCHES PLACARD RECOMMENDATION.

PROGRAMMER: ALLOW 2 numeric characters

PROGRAMMER SET REC_TP_X (RECOMMENDED MANUFACTURER TIRE PRESSURE) BASED ON TIRE SIZE RECORDED IN ACT_TS_X AND TSR_X

///IF IND_TPMS=02, LOOP: X = {LF, LR, RR, RF}///

STEMCON_X   What is the condition of the valve stem on the X tire?
   1. GOOD
   2. POOR (E.G., CRACKED OR CORRODED)
   3. NOT VISIBLE

///ASK IF STEMCON_X = 1,2, Not missing valve stem on X tire///

STEMMAT_X   Of what material is the valve stem on the X tire made?
   1. RUBBER/PLASTIC
   2. METAL
   3. OTHER

///ASK IF STEMCON_X = 1,2, Not missing valve stem on X tire///

CAPCON_X   What is the condition of the valve cap on the X tire?
   1. GOOD
   2. POOR (E.G., CRACKED OR CORRODED)
   3. NOT VISIBLE

///ASK IF CAPCON_X = 1,2, Not missing valve cap on X tire///

CAPMAT_X   Of what material is the valve cap on the X tire made?
   1. RUBBER/PLASTIC
   2. METAL
   3. OTHER

///ASK IF IND_TPMS=01 AND MALFCODE=02, 04 AND REC_TP_X<>MISSING///

TP_1-4
TP_x   INSPECTOR: (USING SUPPLIED TIRE PRESSURE GAUGE) MANUALLY READ THE
                 TIRE PRESSURE FROM THE IDENTIFIED TIRE.

                 PROGRAMMER: ALLOW 2 numeric characters
                 ----
                 99   NOT ENTERED

///ASK IF IND_TPMS=01 AND MALFCODE=02, 04 AND REC_TP_X<>MISSING///
TEMP_1-4
TEMP_x   INSPECTOR: (USING THE SUPPLIED PYROMETER) MANUALLY CAPTURE THE
                 TIRE TEMPERATURE FROM THE IDENTIFIED TIRE.

                 PROGRAMMER: ALLOW 3 numeric characters
                 ----
                 999   NOT ENTERED

///ASK IF TP_X<>MISSING AND TEMP_X<>MISSING///
TP_ADJ_X   PROGRAMMER: Temperature Adjustment to Observed Tire Pressure
                 Adjusted pressure = $TP\_X - [(TEMP\_X - 65) * .1]$

///ASK IF TP_ADJ_X<>MISSING///
TP_SET   PROGRAMMER: SET TIRE PRESSURE OF LOWEST TP_ADJ_X VALUE TO
                 REPRESENT VEHICLE

///ASK IF IND_TPMS=01 AND TP_SET <>MISSING///
TP_LOW   INTERNAL CALCULATION TO COMPARE REC_TP_X AND TP_SET.
                 IF $((REC\_TP\_X-TP\_SET)/(REC\_TP\_X)>=.25$ THEN SET TP_LOW=01, ELSE SET
                 TP_LOW=02

                 PROGRAMMER: TRANSFER TP_LOW TO INTERVIEWER TABLET

///END LOOP///

//ASK ALL IF ELIG=01//
SPARE   Does the vehicle appear to have one or more spare tires (mini- or full-size) or non-
                 matching wheels installed?
                 1.   YES
                 2.   NO

END MODULE 2

MODULE 3

/// ASK ALL///
CHK_RECALL1   Would you like the details of any open recalls on your vehicle?
                 01   YES

                           02   NO

///IF CHK_RECALL1=01 AND RECALL=0///
CHK_RECALL1A.   **Your vehicle has no open recall.**

///IF CHK_RECALL1=01 AND RECALL=1///
CHK_RECALL1B.   **Your vehicle has an open recall. Would you like the recall information now?**
                           01   YES
                           02   NO

///ASK IF CHK_RECALL1B=01//
CHK_RECALL2.   **PROGRAMMER: DISPLAY RECALL RESULTS**
                           INSPECTOR: REPORT AND/OR DISPLAY RECALL RESULTS TO RESPONDENT; IF DISPLAY DOESN'T WORK THEN HAND DRIVER THE WALLET CARD WITH INFO ON ACCESSING RECALL DETAILS

END MODULE 3